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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/350,713	07/09/1999	JOSEPH B. KEJHA	JBK-7	8585
5	7590 06/18/2003			
JOSEPH B KEJHA			EXAMINER	
1022 FREDER MEADOWBR	RICK ROAD OOK, PA 19046		VANAMAN, FRANK BENNETT	
			ART UNIT	PAPER NUMBER
			3618 DATE MAILED: 06/18/2003	

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 07-01)



Office Action Summary

Application No.

09/350,713

Examiner

Art Unit

3618

	Vanaman	3618				
The MAILING DATE of this communication appear	s on the cover sheet with the corres	spondence addres:	s			
Period for Reply A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE						
Status						
1) Responsive to communication(s) filed on Mar 26,	2003		·			
2a) ☐ This action is FINAL . 2b) ☑ This a	ction is non-final.					
3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under <i>Ex parte Quayle</i> , 1935 C.D. 11; 453 O.G. 213.						
Disposition of Claims						
4) X Claim(s) 1-6 and 9-30	is/ard	e pending in the	application.			
4a) Of the above, claim(s) <u>12-25</u>		e withdrawn from				
5) 🗆 Claim(s)		is/are allowed.				
6) 🔀 Claim(s) <u>1-6, 9-11, and 26-30</u>		is/are rejected.				
7)	•	•	,			
8) Claims	are subject to restri	ction and/or elec	tion requirement.			
Application Papers 9) The specification is objected to by the Examiner. 10) The drawing(s) filed on is/are a) accepted or b) objected to by the Examiner. Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a). 11) The proposed drawing correction filed on is: a) approved b) disapproved by the Examiner.						
If approved, corrected drawings are required in reply to this Office action.						
12) The oath or declaration is objected to by the Examiner.						
Priority under 35 U.S.C. §§ 119 and 120 13) Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f). a) All b) Some* c) None of: 1. Certified copies of the priority documents have been received						
2. Certified copies of the priority documents have	ave been received in Application	No	<u> </u>			
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).						
14) Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).						
a) The translation of the foreign language provisional application has been received.						
15) Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.						
Attachment(s)						
1) Notice of References Cited (PTO-892) 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)	Interview Summary (PTO-413) Paper Notice of Informal Patent Application					
3) Information Disclosure Statement(s) (PTO-1449) Paper No(s)2	6) Other:					

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Status of Application

1. Applicant's amendment, filed March 26, 2003, has been entered in the application. Claims 1-6 and 9-30 are pending, claims 12-25 having been withdrawn as directed to a non-elected invention. An office action on claims 1-6, 9-11 and 26-30 follows.

Claim Rejections - 35 USC § 112

2. Claims 1-6, 11/1, 26, 27/1, 27/3 and 28 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention in claim 1, lines 10-11, the recitation appears to contradict the recitation of lines 9-10, similarly in claims 2 and 3, lines 12-13 (both claims) the recitations appear to contradict the recitations of lines 8-9 (both claims), and further it is not entirely clear what particular recited structural distinction results in such a claimed improvement in claim 5, line 2, the claims from which claim 5 depends lack a clear antecedent basis for a plurality of systems. The claims should be carefully reviewed and revised for clarity. The structure which goes to make up the device must be clearly and positively specified. The structure must be organized and correlated in such a manner as to present a complete operative device. Note the

Claim Rejections - 35 USC § 103

- 3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

 5. Claims 4/1 and 4/3 are rejected uniter 35 11 S Of 102(a) value.
- 4. Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable, as best understood; over West (US 3,517,766) in view of Munday (US 5,143,025). West teaches a vehicle riding on 1-4 wheels, having a body, an internal combustion engine which is not sealed from the state of generators driven by the engine, a battery connected to the generators and motor, the electric motor connected to both the battery and generators, the motor for driving the

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vehicle, wherein the vehicle is further provided with a steering system. The reference of West fails to teach the engine as being powered by hydrogen, the hydrogen being obtained through the electrolysis of water from a generating cell, and not stored under pressure, the cell electrically connected to the generators and battery.

Munday teaches a very low emission (col. 1, lines 1-31) vehicle engine (10) operated on a hydrogen fuel from hydrogen obtained from a hydrogen storage element (16) which directly feeds hydrogen generated by electrolysis of water in a cell (36, 40, note col. 3, lines 5-20), to the engine and does not store the hydrogen under pressure, the cell being electrically connected (58, 64) to a source of electricity. It would have been obvious to one of ordinary skill in the art at the time of the invention to replace the engine and fuel source of he vehicle of West with a hydrogen engine and fuel supply as taught by Munday for the purpose of greatly reducing vehicle emissions, as specifically taught by Munday, resulting in a vehicle having a longer range, as best understood, than a vehicle having constituent drive elements of smaller capacity.

The reference of Munday fails to specifically teach that the electric supply be from both a generator and a battery, however, in view of the vehicle of West featuring both a battery and a pair of generators, it would have been obvious to one of ordinary skill in the art at the time of the invention to allow selective connection of the generating cell of Munday to either electricity source (i.e., the battery and/or generators), for the purpose of allowing the cell to be operative under circumstances wherein one or the other of the sources is not in operation.

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Claims 4/1 and 4/3 are rejected under 35 U.S.C. 103(a) as being unpatentable over-West-value in view of Munday and Hart (US 4,124,741). The references of West and Munday are discussed above and fail to teach a hydrogen storage portion which contains carbon graphite. Hart teaches that it is well known to use carbon graphite to store hydrogen (e.g., abstract, and col.3, lines 27-34) due to its advantageous properties, as discussed by Hart. It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the storage element of the vehicle

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of West as modified by Munday with a carbon graphite material for the purposes of enhancing the storage of Hydrogen and improving the operation of the vehicle.

- Claims 5/1 and 5/3 are rejected under 35 U.S.C. 103(a) as being unpatentable over West in view of Munday and Meinzer (US 5,360,461). The references of West and Munday are discussed above and fail to teach a hydrogen storage portion which contains a metal hydride. Meinzer teaches that it is well known to use a metal hydride (8) to store hydrogen (col. 4, lines 37-38) as such a material allows high density storage. It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the storage element of the vehicle of West as modified by Munday with a metal hydride material as taught by Meinzer for the purposes of increasing the amount of hydrogen which may be stored, improving the operation of the vehicle.
- Claims 6/1 and 6/3 are rejected under 35 U.S.C. 103(a) as being unpatentable over West in view of Munday, Hart, Meinzer and Takahashi et al. (US 4,985,184). The references of West and Munday and Hart are discussed above (with respect to claims 4/1 and 4/3) and fail to teach a hydrogen storage portion which additionally contains a metal hydride. Meinzer teaches that it is well known to use a metal hydride (8) to store hydrogen (col. 4, lines 37-38) as such a material allows high density storage. It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the storage element of the vehicle of West as modified by Munday and Hart with an additional metal hydride material as taught by Meinzer for the purposes of increasing the amount of hydrogen which may be stored, improving the operation of the vehicle. As regards the provision of mesocarbon microbeads, while the references of Hart and Meinzer fail to specifically teach the use of such a material, Takahashi et al. teach the use of mesocarbon microbeads (col. 7, lines 11-30) in the production of a carbon element, to assist in the molding thereof. It would have been obvious to one of ordinary skill in the art at the time of the

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invention to provide a portion of the hydrogen storage portion to employ mesocarbon microbeads as taught by Takahashi et al. for the purpose of assisting in the molding of a desired form of the storage element.

8. Claims 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Werth (US 5,840,270, filed 06/1995, 04/1993) in view of Hart, Meinzer and Takahashi et al. Werth teaches an electric vehicle construction including an electric motor (11), battery (24), electricity generating fuel cell (12), which both powers the motor and charges the battery. The reference of Werth fails to teach a hydrogen storage element including carbon graphite. Hart teaches that it is well known to use carbon graphite to store hydrogen due to its advantageous properties, as discussed by Hart. It would have been obvious to one of ordinary skill in the art at the time of the invention to provide a hydrogen storage element containing carbon graphite, as taught by Hart, for the purpose of providing a means to store additionally generated hydrogen generated by the generation system of Werth, in order to provide a residual amount of hydrogen to run the fuel cell.

The references of Werth and Hart are discussed above and fail to teach a hydrogen storage portion which additionally contains a metal hydride. Meinzer teaches that it is well known to use a metal hydride to store hydrogen as such a material allows high density storage. It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the storage element of the vehicle of Werth as modified by Hart with an additional metal hydride material as taught by Meinzer for the purposes of increasing the amount of hydrogen which may be stored, improving the operation of the vehicle. The references of Werth, Hart and Meinzer fail to teach the specific use of mesocarbon microbeads. Takahashi et al. teach the use of mesocarbon microbeads (col. 7, lines 11-30) in the production of a carbon element, to assist in the molding thereof. It would have been obvious to one of ordinary skill in the art at the time of the invention to provide a portion of the hydrogen storage portion to employ mesocarbon microbeads as taught

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by Takahashi et al. for the purpose of assisting in the molding of a desired form of the storage element.

As regards the provision of a body which carries a passenger, at least two running wheels and a steering system, the examiner hereby takes Official Notice that these three features are very old and well known in the art of vehicle manufacture, and it is not deemed beyond the skill of the average practitioner in the art to provide a body which accommodates at least one passenger, at least two running wheels and a steering system for the purpose of providing a vehicle which will safely convey passengers from one destination to another.

- Olaims 11/1 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over West in view of Munday and Tangri (US 4,085,709). The references of West and Munday are discussed above and fail to teach the electrolyzer as being powered by a source of electricity exterior of the vehicle. Tangri teaches a power system for a vehicle which includes an electrolyzer, wherein the electrolyzer may be operated, for example when the vehicle is at rest (col. 3, lines 4-15), by electrical power from an external source (through 24, 26). It would have been obvious to one of ordinary skill in the art at the time of the invention to provide a means for allowing the electrolyzer of West as modified by Munday to be operated from an external power source as taught by Tangri for the purpose of allowing the electrolyzer to operate without draining a vehicle battery.
- Olaims 11/9 and 11/10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Werth in view of Hart, Meinzer, Takahashi et al. and Tangri (US 4,085,709). The references of Werth, Hart, Meinzer and Takahashi et al. are discussed above and fail to teach a hydrogen electrolyzer which may be powered from an external power source. Tangri teaches a power-system for a vehicle which includes an electrolyzer for producing hydrogen, wherein the electrolyzer may be operated, for example when the vehicle is at rest (col. 3, lines 4-15), by

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electrical power from an external source (through 24, 26). It would have been obvious to one of ordinary skill in the art at the time of the invention to provide an electrolyzer as taught by Tangri to the vehicle of Werth as modified by Hart, Meinzer and Takahashi et al. for the purpose of allowing a quantity of hydrogen to be generated without requiring the provision of the material handling (i.e., the iron or iron pellets) taught by Werth as modified by Hart, Meinzer and Takahashi et al., and further it would have been obvious to one of ordinary skill in the art at the time of the invention to provide means for allowing the electrolyzer of Werth as modified by Hart, Meinzer and Takahashi et al. to be operated from an external power source as taught by Tangri for the purpose of allowing the electrolyzer to operate without draining a vehicle battery.

- Claims 26/1, 26/2, and 26/3 are rejected under 35 U.S.C. 103(a) as being unpatentable over West in view of Munday and Laumann et al. (US 4,112,875). The references of West and Munday are discussed above and fail to teach the return of cooled exhaust gasses from the engine back to the intake through a connecting means. Laumann et al. teaches a hydrogen fuel system for an internal combustion engine wherein the exhaust gasses from an output (62) are cooled (64) and partially returned (69) through a connecting means (50) to the engine intake (44/46), for the purpose of reusing uncombusted hydrogen. It would have been obvious to one of ordinary skill in the art at the time of the invention to provide a return to the engine of West as modified by Munday which returns cooled exhaust from the engine output to the engine intake as taught by Laumann et al. for the purpose of insuring that all hydrogen is combusted, thus reducing waste.
- Claims 27/1 and 27/3 are rejected under 35 U.S.C. 103(a) as being unpatentable over
 West in view of Munday, Kerrebrock et al. (US-5,372,617) and Gallagher (US 3,895,102). The
 references of West and Munday are discussed above and fail to teach the hydrogen as being
 generated by a hydrogen generating reactor which produces hydrogen in a reaction with sodium
 borohydride and water. Kerrebrock et al. teaches that the use of sodium borohydride and water is

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old and well known for generating hydrogen (see table 1, col. 2), and as such, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide a reactor which generates hydrogen using sodium borohydride and water, as taught by Kerrebrock et al., for the purpose of easily generating hydrogen without using excessive electric power. The modifying reference to Kerrebrock et al. fails to teach the presence of a metal catalyst. Gallagher teaches that it is well known to use metals as catalysts and in addition to control a particular rate of generation of hydrogen in hydrogen generators. See col. 1, lines 8-27, col. 2, lines 26-42, col. 3, lines 57-62; col 4, line 62 through col. 5 line 12; col. 5, line 46 through col. 6, line 5, etc. It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the reactor taught by Kerrebrock et al. as used to modify the reference of West as modified by Munday with a metal catalyst as suggested by Gallagher for the purpose of controlling a reaction rate.

Claims 27/9 and 27/10 are rejected under 35 U.S.C. 103(a) as being unpatentable over
Werth in view of Hart, Meinzer, Takahashi, et al., Kerrebrock et al. and Gallagher. The references
of Werth, Hart, Meinzer and Takahashi et al. are discussed above and fail to teach a hydrogen
electrolyzer which may be powered from an external power source, the hydrogen as being
generated by a hydrogen generating reactor which produces hydrogen in a reaction with sodium
borohydride and water. Kerrebrock et al. teaches that the use of sodium borohydride and water is
old and well known for generating hydrogen (see table 1, col. 2), and as such, it would have been
obvious to one of ordinary skill in the art at the time of the invention to provide a reactor which
generates hydrogen using sodium borohydride and water, as taught by Kerrebrock et al., for the
purpose of easily generating hydrogen without requiring substantial treatment of raw materials.

The modifying reference to Kerrebrock et al. fails to teach the presence of a metal catalyst.

Gallagher teaches that it is well known to use metals as catalysts and in addition to control a
particular rate of generation of hydrogen in hydrogen generators. See col. 1, lines 8-27, col. 2,

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lines 26-42, col. 3, lines 57-62; col 4, line 62 through col. 5 line 12; col 5, line 46 through col. 6, line 5, etc. It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the reactor taught by Kerrebrock et al. as used to modify the reference of Werth as modified by Hart, Meinzer and Takahashi et al. with a metal catalyst as suggested by Gallagher for the purpose of controlling a reaction rate.

Claims 29 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Werth 14. in view of Kerrebrock et al. and Gallagher. Werth teaches an electric vehicle construction including an electric motor (11), battery (24), electricity generating fuel cell (12), which both powers the motor and charges the battery. The reference of Werth fails to teach the hydrogen as being generated by a hydrogen generating reactor which produces hydrogen in a reaction with sodium borohydride and water. Kerrebrock et al. teaches that the use of sodium borohydride and water is old and well known for generating hydrogen (see table 1, col. 2), and as such, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide a reactor which generates hydrogen using sodium borohydride and water, as taught by Kerrebrock et al., for the purpose of easily generating hydrogen without using excessive electric power. The modifying reference to Kerrebrock et al. fails to teach the presence of a metal catalyst. Gallagher teaches that it is well known to use metals as catalysts and in addition to control a particular rate of generation of hydrogen in hydrogen generators. It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the reactor taught by Kerrebrock et al. as used to modify the reference of Werth with a metal catalyst as suggested by Gallagher for the purpose of controlling a reaction rate.

As regards the provision of a body which carries a passenger, at least two running wheels and a steering system, the examiner hereby takes Official Notice that these three features are very old and well known in the art of vehicle manufacture, and it is not deemed beyond the skill of the average practitioner in the art to provide a body which accommodates at least one passenger, at

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least two running wheels and a steering system for the purpose of providing a vehicle which will safely convey passengers from one destination to another.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Applicant's co-pending application 08/950,445 remains unavailable to the examiner, however Double Patenting issues may exist between the claims of the instant application and those of the co-pending application. As the claims of the co-pending application are not patented at this time, any such rejections would be provisional. As the co-pending application becomes available to the examiner, provisional Double Patenting rejections may be applied against the claims of the instant application.

Response to Comments

Applicant's comments have been carefully considered. The 'applicable court standards' are cited in line with the particular arguments to which they have been applied or are pertinent to.

As regards the provision of mesocarbon microbeads, the examiner agrees with applicant's comments. Note the reference to Takahashi, as now cited and applied. As regards applicant's comments directed to the reference of West as lacking an electrolyzer, the examiner notes that at

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no time has it been suggested that the reference to West alone includes an electrolyzer, rather it is the combination of the references of West and Munday, wherein the modifying reference to Munday is the one which teaches the electrolyzer ("the electrolyzer of the reference of West as modified by Munday" refers to the combined references, not only one or the other of the references). As regards the combination including the reference to Laumann, the examiner disagrees with applicant's position: in the exhaust (62), Laumann teaches that the products of combustion are all in gaseous form- steam, residual oxygen and the inert gas. At separator 58, only part of the exhaust is returned, in that the steam has been condensed and is not returned to the engine intake 44. See Laumann at col. 2, lines 24-60. Applicant's comments the certain combined references teach more features than are claimed are noted, however applicant's claim recitation does not preclude such further elements. Applicant has argued that unexpected results have been achieved from the vehicle according to the claimed structure, but has failed to provide any evidence of such a result.

As regards claims 1-3, note that the references as combined teach the limitations as set forth in the claims. Further applicant may note that the motivation to combine each reference or set of references is set forth at the end of the statement of rejection. See Munday at col. 1, lines 1-31, and col. 2, lines 26-29 and lines 37-39 wherein Munday discusses the desirability of the use of hydrogen fuel in internal combustion engines for the very desirable result of lower emissions.

In response to applicant's argument that the references must explicitly provide a suggestion for combining, a conclusion of obviousness may be made from common knowledge and common sense of the person of ordinary skill in the art without any specific hint or suggestion in a particular reference (see *In re Bozek*, 416 F.2d 1385, 1390, 163 USPQ 545, 549 (CCPA 1969)), with skill being presumed on the part of the artisan, rather than the lack thereof (see *In re Sovish* 769 F.2d 738, 742, 226 USPQ 771, 774 (Fed. Cir. 1985)); further, references may be combined although none of them explicitly suggests combining one with the other (see *In re Nilssen* 7 USPQ2d 1500 (Fed. Cir. 1989)).

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Please further note the following from Section 2144 of the MPEP: "The rationale to modify or combine the prior art does not have to be expressly stated in the prior art or it may be reasoned from knowledge generally available to one of ordinary skill in the art, established scientific principles, or legal precedent...The reason or motivation to modify the reference may often suggest what the inventor has done, but for a different purpose or to solve a different problem...It is not necessary that the prior art suggest the combination to achieve the same advantage or result discovered by Applicant." Also Chief Judge Nies writes in a concurring opinion, "While there must be some teaching, reason, suggestion, or motivation to combine existing elements to produce the claimed device, it is not necessary that the cited references or the prior art specifically suggest making the combination...In sum, it is off the mark for litigants to argue, as many do, that an invention cannot be held to have been obvious unless a suggestion to combine prior art teachings is found in a specific reference". See *In re Oetiker* 977 F.2d 1443, 24 USPQ.2d 1443 (Fed.Cir.1992).

Applicant may further desire to note the reference of Munday at col. 2, lines 37-39, where Munday specifically refers to the application of a hydrogen fuel system to an existing internal combustion engine. The improvement which results from such a retrofit is discussed in Munday at col. 1, lines 6-31.

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

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Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to F. Vanaman whose telephone number is (703) 308-0424. Any inquiry of a general nature or relating to the status of this application should be directed to the group receptionist whose telephone number is (703) 308-1113.

As of May 1, 2003, any response to this action should be mailed to:

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Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

or faxed to:

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703-872-9325 (Customer Service)

F. VANAMAN
Primary Examiner
Art Unit 3618

F. Vanaman June 12, 2003